

H. infelix (Smith *) appears to be the nearest ally of this species. Its spire, however, is more raised, the peripheral keel even more acute, the umbilical perforation a trifle larger, and the form of the aperture rather different.

Papuina lilium, Fulton.

Hab. Choiseul, one of the Solomon Islands.

The exact locality of this species has not hitherto been recorded. It is remarkable that this very distinct species should have been considered by Dr. Cox (Proc. Zool. Soc. 1873, p. 567) as a variety of *P. xanthochila*, Pfr., quoted by Pilsbry as from Bougainville Island.

The difference in the number of volutions pointed out by Mr. Fulton is not constant, for both the two specimens in the Museum have six whorls (not $5\frac{1}{2}$). Both are much finer than the shell figured by him and resemble that represented in the Proc. Zool. Soc. 1873, pl. xlviii. fig. 7.

Papuina Dampieri (Angas).

Helix (*Geotrochus*) *Dampieri*, Angas, Proc. Zool. Soc. 1869, p. 47, pl. ii. fig. 6.

Papuina Dampieri, Pilsbry, Man. Conch. vol. vii. p. 11.

Hab. Choiseul Island (*Meek*); Louisiade Archipelago (*Angas*); Choiseul Bay, Bougainville Straits (*Guppy*); Bougainville Island (*Fulton*, in *Brit. Mus.*).

I am inclined to think that the original locality assigned to this species must be erroneous, for its occurrence at such a remote place separated by three hundred miles of sea is most improbable.

XXIV.—*Notes on the Tabani from the Palæarctic Region in the British Museum Collection.* By GERTRUDE RICARDO.

WHILE going through the *Tabani* from the Palæarctic Region in the British Museum Collection I ascertained several particulars as regards the species described by Walker, and identified various species in the collection of Diptera from Algeria by the Rev. A. E. Eaton, and append a few notes which may be of use. Brauer's work on the European *Tabani* is, of course, of the greatest use, but, as has been

* 'The Conchologist,' vol. ii. p. 109; 'Journal of Malacology,' vol. v. p. 22, pl. ii. figs. 6, 7.

remarked by others, I cannot follow him satisfactorily in many of his minute differences, chiefly in the shape of the palpi and the length of the forehead; in the females they do not seem marked enough for the identification of species such as, for example, *solstitialis* and *tropicus*.

The following species have been found in Algeria, collected by the Rev. A. E. Eaton:—

Atylotus tomentosus, Macq.; *Atylotus alexandrinus*, Wied.; *Atylotus rusticus*, F.; *Tabanus autumnalis*, L.; *Tabanus cordiger*, Mg.; *Tabanus pulchellus*, Loew; and one new species described below.

Atylotus tomentosus, Macq.

One male “near Biskra, along the route of ‘des Zibans’ in the cornfields, on ‘Ammin Visnoga,’ 18.^b v. 93” (*Eaton*), 94. 114.

One female from Constantine, 28. v. 95 (*Eaton*), 96. 137.

One female “from Constantine, on the edge of the pine-plantations on the top of the hill north of Mansoura, 11. vi. 94” (*Eaton*), 95. 34.

The male agrees with the figure in Explor. d’Algér. (Lucas); the figure in Macquart’s Dipt. Exot. is different and apparently depicts a female specimen.

Atylotus alexandrinus, Wied.

One male from Colonne Voirol, Algiers, 5. vi. 93 (*Eaton*), 94. 114.

There is also a male from Tunis (*F. Moore*), 68. 4.

The third joint of the antennæ is wanting; the first posterior cell of the wings is narrowed at its apex, which is not mentioned as a characteristic of *A. alexandrinus* by any authors; otherwise these specimens agree with the description.

Atylotus rusticus, L.

? *flaviceps*, Zett.; ? *ruralis*, Zett.; *Rousselii*, Macq.

Two females “from Constantine, on the edge of the pine-plantations on the top of the hill north of Mansoura; visits ‘Ferula.’ 11. vi. 94” (*Eaton*), 94. 114.

The *Tabanus Rousselii*, Macq., a species from Algiers, is, I consider, a synonym of *Atylotus rusticus*, F.

These specimens differ from the description of *Atylotus rusticus* only by the apex of the third joint of the antennæ being blackish; the markings on the forehead, which seem

to be variable in this species, appear thus on these specimens:—Frontal callus yellowish brown, oblong, furrowed, the middle one smaller, oblong, black; in some females from Hungary these callosities are both black, and smaller. The shape of the antennæ and palpi agrees with those of *A. rusticus*.

Atylotus Eatoni, ♂ ♀, sp. n.

Male (type) "from Constantine, Algeria, along the route de la Corniche, visiting '*Ferula scabra*,' 2. vi. 95" (*Eaton*), 96. 137.

Male from the same place "along the Arab cliffs path between 9.15 and 10 A.M., 22. vi. 94" (*Eaton*), 94. 114.

Male from the same place "between the railway and the route de la Corniche, 18. vi. 95" (*Eaton*), 96. 137.

Male "from Bône, Algeria, by the Bône-Gmelma railway, 23. v. 96" (*Eaton*), 96. 136.

Female (type) "near the Colonne Voirol, Algiers, among bushes near the route Madeleine on '*Ferula communis*,' 18. v. 95" (*Eaton*), 94. 114.

This species may be distinguished from *Atylotus ater*, Rossi, and *Atylotus anthracinus*, Mg., by the much smaller tooth of the antennæ; from *Atylotus unbrinus*, Mg., by the absence of any brown cloud or spot on the wings behind the stigma; from *Atylotus alexandrinus*, Wied., by the hyaline wings and the short-haired eyes; from *Atylotus Letourneuxi*, Bigot, by the wholly black tibiæ, not "widely whitish yellow at base," as Bigot describes is the case in his species.

Black. Eyes hairy, the upper facets only very slightly larger; the third joint of the antennæ with a small tooth. Wings hyaline.

Male.—Head not larger than in the female. Eyes with no band, the facets on the upper part on each side of the forehead slightly larger; the pubescence is sparse, the ocelligerous tubercle inconspicuous, yellow-haired, the hind part of the head with long yellow hairs; the frontal triangle is rather protruding, brownish, with silver-grey tomentum. Antennæ black, reddish brown at the base of the third joint; the first joint cylindrical, stout, with black hairs; the second cup-like in shape, with black hairs on each margin; the third joint with a moderate tooth, the annulate portion as long as the basal portion. Face blackish, with some grey tomentum near the eyes, with black hairs intermixed with some white ones on the inner side; beard blackish brown, white below; palpi black, with long black hairs. Thorax

black, with grey tomentum and fine short rufous hairs on the dorsum, some black hairs intermixed, greyer at the sides and on shoulders, breast-sides blackish brown; halteres reddish brown. Legs black, the extreme apices of femora yellowish; the pubescence is black, long on the coxæ and femora. Abdomen black, shining; pubescence black, the hairs at the sides black, fulvous on the last two segments, the underside black. Wings hyaline, narrowly yellowish brown on the fore border, the veins reddish brown; no appendix; the first posterior cell not narrowed at its apex.

Length 16, width of head 5 mm.

Female.—Very similar to the male. Frontal stripe blackish, with grey tomentum; the frontal callus black, shining, oval, not reaching the eyes, prolonged as a narrow stripe beyond the middle of the forehead, which is about four times as long as it is broad; no ocelligerous tubercle; the frontal triangle is black, shining, with a grey middle line and grey at the sides, rather protuberant. Hind part of the head with a black tuft of hairs in the centre and shorter yellowish hairs beyond. Palpi black, with grey tomentum and black hairs; the second joint long, rather stouter at the base, gradually tapering to a point, almost straight. Abdomen broader than in the male, with plum-coloured tomentum on the basal segments, most noticeable on the second one; the fulvous hairs on the last segments are more numerous and distributed over the dorsum of the segments; and is fainter coloured, nearly white. The hairs on the thorax are also greyer than in the male.

Length 15, width of head 5 mm.

Tabanus autumnalis, L.

One female "from Biskra, on the dunes 6 $\frac{1}{4}$ miles from the town, 18. v. 93" (*Eaton*), 94. 114.

Tabanus cordiger, Meig.

One female "from Biskra, on the dunes, caught between 7.15 and 9.30 A.M., 6 $\frac{1}{4}$ miles from the town, 31.^b v. 93" (*Eaton*), 94. 114.

One female "from Biskra, near Hammam as Salahn, 14. iv. 95" (*Eaton*), 94. 114.

This species does not appear to have been recorded before from North Africa.

Tabanus pulchellus, Loew.

One male from Biskra, 28. v. 94 (*Eaton*), 94. 114.

One female from Biskra, 28. v. 94 (*Eaton*), 94. 114.

Two females "from Biskra on the dunes, 7.15-9.30 A.M., 6¼ miles from the town, 31. v. 93" (*Eaton*), 94. 114.

The type came from Asia Minor. These specimens answer to the description, but the femora are entirely yellow in the male and female; there are a few black hairs on the palpi of the female. In the table of the males Brauer places the species conditionally under the section with long hairs on the back of the head; this is correct as far as concerns these specimens from Algeria. Brauer remarks that this species makes the genus *Atylotus* no longer tenable, as this species is near *A. rusticus*, L., but on account of the naked (or nearly naked) eyes it must belong to *Tabanus in sensu stricto*. A note on the female gives the eyes as light sage-green in life; Brauer describes them thus, viz. as glass-green.

Tabanus albifacies, Loew.

Two females from Moghara, Egypt, March 1901 (*Dr. C. W. Andrews*), 1902. 20, answer to the description given by Loew; they have a narrow black, not very noticeable, band below the eyes, not mentioned by Loew.

This species, *pulverifer*, Wlk., and *pulchellus*, Loew, are all near *cordiger*. These differ by having an appendix to the wing, and may be distinguished from *pulverifer* and *pulchellus* by their black antennæ and darker legs.

The type came from Asia Minor.

The Walker types of *Tabanus macrops*, *nigrifer*, and *siccus* from Egypt, of *Tabanus terminalis* from Mount Sinai, and of *Tabanus pallescens* and *politus* from Arabia are not to be found in the British Museum Collection, and are unknown to me.

The *Tabanus transiens*, Walker, from an unnamed locality, is missing now from the Collection; it was probably a synonym of *Tabanus ater*, Rossi, and might in any event be now expunged from the Catalogue of *Tabani*.

The specimen named *Tabanus connexans*, ♀, Saunders Coll., 68. 4, by Walker, from an unknown locality, is nothing but a specimen of *Tabanus bromius*, L., and should be added to the synonyms of that species.

The specimen named *Tabanus depressus*, ♀, by Walker, from unknown locality, badly preserved, is, I believe, an

example of *Theriopectes luridus*, Fall., and should be added to the synonyms of *Th. luridus*.

Tabanus pulverifer, ♂ ♀, Walker.

Male (type) from Turkey in Asia (*Loftus*), 50. 105.

Three females from the same locality (co-types) are nearly related to *Tabanus cordiger*, Mg., but belong to a distinct species; they differ in the following particulars:—

Antennæ wholly red, black at the apex; frontal callus reddish brown. Coxæ and femora reddish yellow, as are the tibiæ, only the anterior tibiæ with a brown apex; tarsi reddish brown, all with white pubescence. The underside of abdomen has no median black stripe. The species is much lighter in colour and slighter in form than *cordiger*; the four specimens vary in size from 12–14 mm. In the female the band under the eyes is narrow and yellowish brown. In the male the black hairs on the hind part of the head are not present; the underside of the abdomen is reddish, greyer at the apex.

Tabanus polygonus, ♂ ♀, Walker.

Male (type) from Bagdad (*W. K. Loftus*), 50. 105; and another male from the same locality.

Female (type) from same locality.

The males would come in Brauer's table near *autumnalis*, *spectabilis*, and *rectus*. The female, which is much smaller, may possibly not belong to the same species and has a slight resemblance in appearance to *Atylotus rusticus*, Z.

A redescription may prove of use:—

Reddish-brown species, with grey median triangular spots on the abdomen. Eyes bare; no long hairs on the hind part of the head.

Male.—Head large; facets of eyes unequal, sharply divided, the large facets yellowish, extending over more than half the eyes, surrounded by a narrow zone of small facets above and a broad zone on the basal half. Frontal triangle grey, reddish at apex. Antennæ red, with the apex darker; the third joint with a small tooth, long and slender, the annulated portion not so long as the basal joint; the ocelligerous tubercle small, brown. Face whitish, with white hairs; beard white; palpi white, the second joint oval, with white pubescence. Thorax blackish, with four grey stripes and greyish pubescence; the shoulders red; the sides reddish, with black hairs above and whitish ones below; scutellum

black, with grey tomentum. Abdomen long and narrow, reddish, with a row of median grey triangular spots, which on the second and last segments are surrounded by black margins; the hind borders of the segments narrowly white, the pubescence black; the underside brighter red, with some irregular black markings. Legs red; the coxæ and femora with longish white hairs; the tibiæ with short black pubescence on the sides and some whitish-yellow hairs on their flat surfaces; tarsi with black pubescence, pulvilli yellow. Wings longer than the abdomen, hyaline, the stigma and veins yellow; no appendix.

Length 18, width of head 5 mm.

Female.—Eyes not large, the facets equal, with two bands (in the male I can see no trace of bands). Frontal callus reddish brown, almost square, a little wider at its base, nearly touching the eyes; frontal stripe grey, with black markings (probably denuded), the middle callus being a black stripe not joining the frontal callus; the vertex blackish; no ocelligerous tubercle. Antennæ at base red (the rest wanting). Frontal triangle grey. Face grey, with white hairs; beard white; palpi pale yellow, the second joint long and slender, at the base stouter, gradually tapering to a point, nearly straight, with a few black hairs. On the abdomen the grey triangular spots are replaced by a broad stripe of greyish tomentum, the black pubescence is longer, the abdomen not so pointed as in the males. Wings with the first posterior cell distinctly narrowed at the apex (this is not the case in the male).

Length 14, width of head 4 mm.

There are several species of *Tabani* from Japan: a long series of *Tabanus trigonus*, Coq., male and female; this is a very nearly related species to the European *bovinus* and *sudeticus*, the brighter yellow colour of the antennæ and the larger tooth of the third joint, with an appendix to the wings, being the most striking differences. Another species (males and females) from Korea is very nearly allied to *Tabanus bovinus*, Lw., but the tooth of the antennæ is larger and brighter yellow and the wings possess an appendix; the eyes of the males having facets all equal in size distinguish it from *Tabanus trigonus*, Coq.